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09/547,243	04/11/2000	Stanley Young Hobbs	RD-27.538	4419

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EXAMINER	
GARCIA OTERO, EDUARDO	
ART UNIT	**PAPER NUMBER**
2123	4

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/547,243	HOBBS ET AL.	
	Examiner	Art Unit	
	Eduardo Garcia-Otero	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2000 and 30 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION: Non-Final (first action on the merits)

Introduction

1. Title is: METHOD, SYSTEM, AND PROGRAM PRODUCT FOR ENABLING DESIGN OF PRODUCTS HAVING A VISUAL EFFECT
2. First named inventor is: HOBBS
3. Claims 1-72 have been submitted, examined, and rejected.
4. Priority is claimed to provisional US application filed 8/9/99.
5. Note that in the Information Disclosure Statement (Form 1449) List of Items, the document "AL" contained an extra digit in the document number. The Examiner has corrected the Form 1449, and now it matches the submitted document. A corrected Form 1449 is attached to this action.

Index of Prior Art

6. **Pringle** refers to US Patent 6,166,814.
7. **McKay** refers to US Patent 5,593,773.
8. **Computer Images** refers to Computer Images (Understanding Computers series), by Time-Life Books, 1986, ISBN 0-8094-5662-1, pages 34-35, 68-69, 78-79, 80, 102.
9. **Communications** refers to Communications (Understanding Computers series), by Time-Life Books, 1986, ISBN 0-8094-5700-8, pages 66-67.
10. **Computer Security** refers to Computer Security (Understanding Computers series), by Time-Life Books, 1986, ISBN 0-8094-5670-2, pages 76-77.

Specification-objections-informalities

11. The Examiner appreciates the clear writing and substantial detail of the specification. However, there are a few minor objections and unclear points. Appropriate correction is required.
12. First, Page 8 line 8 states "blue components of the target color which values range from 0-256 for each component". The Applicant appears to intend "0-255" which corresponds to 256 possible values, which can be represented by an 8 bit binary number (from 00000000 to 11111111). Note that zero is a possible value. It is common to represent a color using 24 bits (8 + 8 + 8), that is, 8 bits for each of three additive primary tones.

13. Second, Page 9, Table 1, column labeled "% Aluminum" is not clear. The paragraph above the table discusses "Series of polycarbonate blends were prepared containing between 0.001 and 0.005 parts by weight of metallic flakes". Does this mean that a series was prepared for each mean particle size listed in table 1? And do the particles listed in Table 1 vary in % aluminum dependent upon the particle size? Note that the 225 micron flakes only have a 70 % Aluminum, which seems out of place in the context of the other data, perhaps a typographical error. There is no apparent relationship between % Aluminum and particle size. The purpose of this table is not clear.
14. Third, in FIG 8, the pixel representation at the top left (the largest flake) is a configuration not shown in FIG 5 or FIG 6. Specifically, it is a 3 by 3 grid with the top right pixel missing (8 pixels total). Page 10 line 23 states, "This configuration [FIG 6 rightmost configuration, 7 pixels] was also desirable form a computational standpoint in that it could easily adapted to the construction of larger, irregular particles to represent other types of additives". Is the FIG 8 top left flake an adaptation of the FIG 6 rightmost flake, and if so, how?

Claim Interpretation

15. **The claim language is interpreted in light of the specification.** Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns,* 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).
16. In claim 25, the term "system" is interpreted as the 35 USC 101 statutory category of "machine".
17. In claim 36, the term "system" is interpreted as the 35 USC 101 statutory category of "process". The Examiner suggests that these claims be amended to more clearly identify the statutory category intended. It is not clear for the same term to have different meanings, in the same set of claims. This problem stems from the broad use of the term "system".

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been

obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: Determining the scope and contents of the prior art. Ascertaining the differences between the prior art and the claims at issue. Resolving the level of ordinary skill in the pertinent art. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 1-72 are rejected under 35 U.S.C. 103(a) as being unpatentable.

21. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images.

22. Claim 1 is an independent "computer-implemented method" claim with 2 limitations. For clarity, the Examiner uses bracketed numbers to identify multiple limitations in a single claim.

23. [1]-**"obtaining information relating to the additive"** is disclosed by Pringle column 1 line 22 "modeling the paint as diffusely scattering pigments immersed in a binder... Kabulka-Munk equations... identify the concentrations of pigments... transformation needs to be quantified experimentally, with the theory providing the ability to accurately interpolate between measurement points".

24. Pringles does not expressly disclose the additional limitation.

25. [2]-**"providing a representation of the product having the visual effect based on the information relating to the additive"** is disclosed by Computer Images page 102 "graphics now penetrate all three phases of computerized manufacturing, from conceptualizing the product to actually making it... manufacturers prize the enormous gains in productivity made possible by computer simulations", and page 68-69 "To mimic reality, computer graphics must imitate the intricate play of light in a scene, where countless individual rays are reflected from shiny surfaces, absorbed by dull ones, blocked by opaque objects an transmitted, to a greater or lesser degree, by transparent and translucent ones. For a computer to emulate these effects requires a rendering technique called ray tracing." Note that the

drawing on pages 68-69 in the original prior art is in color, but only black and white copies are placed in the file and mailed to Applicant.

26. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images to modify Pringle. One of ordinary skill in the art would have been motivated to do this to achieve "enormous gains in productivity" (per Computer images page 102) by reducing the number of "trial" coatings (per Pringle column 2 line 23) required to obtain the desired product.

27. Claims 2- 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and McKay and Computer Security.

28. In claim 2, **"additive comprises information relating to a flake material"** is disclosed by Pringle column 1 line 65 "aluminum flakes are mixed into the binder with the pigment", and column 2 line 30 "distribution of flakes must be modeled in a statistical manner" and FIG 1 showing flakes and diffusely scattered pigments.

29. In claim 3, [1] **"type of flake material"** is disclosed by McKay at column 1 line 13 "median particle size", and line 15 "aspect ratio", and line 63 "aluminum or aluminum alloy flakes".

30. Also in claim 3, [2] **"concentration of the flake material"** is disclosed by McKay at column 2 line 5 "Metal flake pigments... concentrations of 1 to 30% by weight".

31. In claim 4, **"information relating to a diffuser material"** is disclosed by Pringle column 1 line 22 "modeling the paint as diffusely scattering pigments immersed in a binder... Kabulka-Munk equations... identify the concentrations of pigments... transformation needs to be quantified experimentally, with the theory providing the ability to accurately interpolate between measurement points", and by Computer Images page 68-69 "To mimic reality, computer graphics must imitate the intricate play of light in a scene, where countless individual rays are reflected from shiny surfaces, absorbed by dull ones, blocked by opaque objects an transmitted, to a greater or lesser degree, by transparent and translucent ones. For a computer to emulate these effects requires a rendering technique called ray tracing."

32. In claim 5, [1] **"a type of diffuser material"** is disclosed by McKay at column 1 line 13 "median particle size", and line 15 "aspect ratio", and line 63 "aluminum or aluminum alloy flakes".

33. Also in claim 5, [2] **"a concentration of diffuser material"** is disclosed by McKay at column 2 line 5 "Metal flake pigments... concentrations of 1 to 30% by weight".
34. Also in claim 5, [3] **"a thickness of the product"** is disclosed by Computer Images page 68 "imitate the intricate play of light... ray tracing...shape, position, colors, textures", and drawing on pages 68-69.
35. Also in claim 5, [4] **"a distance between the product an object to be observed behind the product"** is disclosed by Computer Images page 68 "imitate the intricate play of light... ray tracing... shape, position, colors, textures", and drawing on pages 68-69.
36. In claim 6, **"color of the product"** is disclosed by Computer Images page 68 "imitate the intricate play of light... ray tracing... shape, position, colors, textures", and drawing on pages 68-69.
37. In claim 7, **"retrieving the representation from a database of representations associated with a plurality of products having visual effects, and computer generating the representation of the product having the visual effect"** is disclosed by Computer Images page 34 "Once created... stored in a library of shapes and recalled for future use", and page 35 "a library of basic circuit components", and pages 79 "5 key frames of a deer", and page 80 "library of 26 preformed solid shapes", and page 84 "The ship could be enlarged or reduced in size at will, and–more significant—it could be easily replicated".
38. In claim 8, **"storing the representation... and allowing authorized access"** is disclosed by Computer Security at page 76-77 "Controlling Access to Computer files".
39. In claim 9, **"obtaining a request for a physical sample of the product having the visual effect"** is disclosed by Pringle column 2 line 23 "trial" coatings.
40. In claim 10, **"determining ingredients and concentrations for producing the product having the visual effect"** is disclose by Computer Images page 102 "graphics now penetrate all three phases of computerized manufacturing, from conceptualizing the product to actually making it... manufacturers prize the enormous gains in productivity made possible by computer simulations".
41. In claim 11, **"plastic material"** is Pringle column 1 line 22 "modeling the paint as diffusely scattering pigments immersed in a binder", and Computer images page 102 "plastic"

42. **MOTIVATION FOR CLAIMS 2-11.** At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images and McKay and Computer Security to modify Pringle. One of ordinary skill in the art would begin with Pringles as a basic model of flaked paint, would be motivated to use Computer Images ray tracing simulations in order to gain in productivity by simulating designs to determine the design parameters before producing Pringle's trial coatings.
43. Further, one of ordinary skill in the art would motivated to improve the detail and accuracy of the Pringles model by incorporating additional details from McKay such as the physical parameters of the flake and the concentration of the flake, and by incorporating additional details from Computer Images such as the shape and positions of the objects for ray tracing. All of these properties are essential for accurate ray tracing. Additionally, it is good standard computer image "bookkeeping" procedure to save time by organizing sets of related images in database libraries per Computer Images, and to exercise good standard security practices by restricting access per Computer Security in order to protect the data and the programs.
44. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images.
45. Claim 12 is an independent "method" claim with 3 limitations. For clarity, the Examiner uses bracketed numbers to identify multiple limitations in a single claim.
46. [1]-**"obtaining information relating to the additive"** is disclosed by Pringle column 1 line 22 "modeling the paint as diffusely scattering pigments immersed in a binder... Kabulka-Munk equations... identify the concentrations of pigments... transformation needs to be quantified experimentally, with the theory providing the ability to accurately interpolate between measurement points".
47. Pringles does not expressly disclose the additional limitation.
48. [2]-**"providing a representation of the product having the visual effect based on the information relating to the additive"** is disclosed by Computer Images page 102 "graphics now penetrate all three phases of computerized manufacturing, from conceptualizing the product to actually making it... manufacturers prize the enormous gains in productivity made possible by computer simulations", and page 68-69 "To mimic reality, computer graphics must imitate the intricate play of light in a scene, where countless individual rays are

reflected from shiny surfaces, absorbed by dull ones, blocked by opaque objects an transmitted, to a greater or lesser degree, by transparent and translucent ones. For a computer to emulate these effects requires a rendering technique called ray tracing." Note that the drawing on pages 68-69 in the original prior art is in color, but only black and white copies are placed in the file and mailed to Applicant.

49. [3]-**"first computing unit coupled via a communications network to a second computing unit"** is disclosed by Communications page 66-67 "number of machines... network... communication system dispersed over a wide geographical area".
50. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images and Communications to modify Pringle. Starting with Pringle's basic model of flaked paint, one of ordinary skill in the art would be motivated to look to use Computer Images simulation in order to achieve "enormous gains in productivity" (per Computer Images page 102) by reducing the number of "trial" coatings (per Pringle column 2 line 23) required to obtain the desired product. One of ordinary skill would further be motivated to provide this simulation efficiently to many users by using a communications network to efficiently connect the multiple users. Using a network further allows the software and data to be centralized, and to control access.
51. Claims 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and Communications and McKay and Computer Security.
52. Claims 13-24 depend from independent claim 12
53. Claims 13-22 have the same additional limitations as dependent claims 2-11 respectively, and thus are rejected for the same reasons.
54. In claim 23, **"communications network is a global computer network"** is disclosed by Communications page 66-67 "number of machines... network... communication system dispersed over a wide geographical area".
55. In claim 24, **"transferring, from the second computing unit a module for representing a plurality of products having a plurality of additives to the first computing unit"** is disclosed by Communications page 66-67 "Packet Switching: An Efficient Way to Shuttle Data... allow users in several locations to share computing facilities and resources", and

Computer Images page 35 "use Sketchpad to create a library of basic circuit components such as transistors and resistors".

56. **MOTIVATION FOR CLAIMS 13-24.** At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images and Communications and McKay and Computer Security to modify Pringle. Starting with Pringle's basic model, one of ordinary skill in the art would be motivated to look to use Computer Images simulation in order to achieve "enormous gains in productivity" (per Computer Images page 102) by reducing the number of "trial" coatings (per Pringle column 2 line 23) required to obtain the desired product. One of ordinary skill would further be motivated to provide this simulation efficiently to many users by using a communications network to efficiently connect the multiple users. Using a network further allows the software and data to be centralized, and to control access, and to efficiently shuttle data and share resources. Further, one of ordinary skill in the art would motivated to improve the detail and accuracy of the Pringles model by incorporating additional details from McKay such as the physical parameters of the flake and the concentration of the flake, and by incorporating additional details from Computer Images such as the shape and positions of the objects for ray tracing. All of these properties are essential for accurate ray tracing. Additionally, it is good standard computer image "bookkeeping" procedure to save time by organizing sets of related images in database libraries per Computer Images, and to exercise good standard security practices by restricting access per Computer Security in order to protect the data and the programs. One of ordinary skill would further be motivated to provide this simulation efficiently to many users by using a communications network to efficiently connect the multiple users. Using a network further allows the software and data to be centralized, and to control access.

57. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and Communications.

58. Claim 25 is an independent "system" (machine) claim with 3 limitations. For clarity, the Examiner uses bracketed numbers to identify multiple limitations in a single claim.

59. [1]-**"obtaining information relating to the additive"** is disclosed by Pringle column 1 line 22 "modeling the paint as diffusely scattering pigments immersed in a binder... Kabulka-

Munk equations... identify the concentrations of pigments... transformation needs to be quantified experimentally, with the theory providing the ability to accurately interpolate between measurement points".

60. Pringles does not expressly disclose the additional limitation.

61. [2]-**"providing a representation of the product having the visual effect based on the information relating to the additive"** is disclosed by Computer Images page 102 "graphics now penetrate all three phases of computerized manufacturing, from conceptualizing the product to actually making it... manufacturers prize the enormous gains in productivity made possible by computer simulations", and page 68-69 "To mimic reality, computer graphics must imitate the intricate play of light in a scene, where countless individual rays are reflected from shiny surfaces, absorbed by dull ones, blocked by opaque objects an transmitted, to a greater or lesser degree, by transparent and translucent ones. For a computer to emulate these effects requires a rendering technique called ray tracing." Note that the drawing on pages 68-69 in the original prior art is in color, but only black and white copies are placed in the file and mailed to Applicant.

62. [3]-**"first computing unit coupled via a communications network to a second computing unit"** is disclosed by Communications page 66-67 "number of machines... network... communication system dispersed over a wide geographical area".

63. [4]-**"processor"** is disclosed by Computer Images page 102 "graphics now penetrate all three phases of computerized manufacturing, from conceptualizing the product to actually making it...". Note that said computers contain processors.

64. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images and Communications to modify Pringle. Starting with Pringle's basic model of flaked paint, one of ordinary skill in the art would be motivated to look to use Computer Images simulation (using processors) in order to achieve "enormous gains in productivity" (per Computer Images page 102) by reducing the number of "trial" coatings (per Pringle column 2 line 23) required to obtain the desired product. One of ordinary skill would further be motivated to provide this simulation efficiently to many users by using a communications network to efficiently connect the multiple users. Using a

network further allows the software and data to be centralized, and to control access, and to efficiently bill the user.

65. Claims 26-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and Communications and McKay and Computer Security.
66. Claims 26-35 depend from claim 25, with the same additional limitations as claims 2-11 respectively, and thus are rejected for the same reasons.
67. **MOTIVATION FOR CLAIMS 26-35.** At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Computer Images and McKay and Computer Security to modify Pringle. One of ordinary skill in the art would begin with Pringles as a basic model of flaked paint, would be motivated to use Computer Images ray tracing simulations in order to gain in productivity by simulating designs to determine the design parameters before producing Pringle's trial coatings.
68. Further, one of ordinary skill in the art would motivated to improve the detail and accuracy of the Pringles model by incorporating additional details from McKay such as the physical parameters of the flake and the concentration of the flake, and by incorporating additional details from Computer Images such as the shape and positions of the objects for ray tracing. All of these properties are essential for accurate ray tracing. Additionally, it is good standard computer image "bookkeeping" procedure to save time by organizing sets of related images in database libraries per Computer Images, and to exercise good standard security practices by restricting access per Computer Security in order to protect the data and the programs.
69. Claims 36-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and Communications and McKay and Computer Security.
70. Claims 36-48 are "means for" claims with the same limitations as claims 12-24 respectively, and are rejected for the same reasons with the same motivation.
71. Claims 49-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and McKay and Computer Security.
72. Claims 49-59 are "program storage device readable by a machine" claims with the same limitations as claims 1-11 respectively, and are rejected for the same reasons.
73. Claims 60-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle in view of Computer Images and Communications and McKay and Computer Security.

74. Claims 60-72 are "article of manufacture" claims with the same limitations as claims 12-24 respectively, and are rejected for the same reasons.

Additional Cited Prior Art

75. The following US patents or publications are hereby cited as prior art, but have not been used for rejection. Applicant should review these carefully before responding to this office action.

76. US Patent 4,711,580 by William H. Venable, discloses "flake component and diffuse component... facilitate matching of finishes" at Abstract.

Conclusion

77. All claims stand rejected, and some minor specification objections are pending.

Communication

78. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Tuesday through Friday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for this group is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * *

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PRIMARY PATENT EXAMINER
TECHNOLOGY CENTER 2100